COGNITIVELY GUIDED INSTRUCTION (CGI)
PROGRAM OVERVIEW

Cognitively Guided Instruction (CGI) is a professional development program for K-6 teachers that show explicitly what kind of knowledge students bring to the mathematics learning process and how they connect that knowledge with formal concepts and operations. CGI is guided by two major theses. The first thesis is that children bring an intuitive knowledge of mathematics to school with them and that this knowledge should serve as the basis for developing the formal mathematics instruction in primary school. The second thesis is that mathematics instruction should be based on the relationship between skills and problem solving.

CGI provides a basis for identifying what is difficult and what is easy for students to comprehend in their study of mathematics. The emphasis is on what children can do, rather than what they cannot do, which leads to a very different approach regarding wrong answers. With the CGI approach, teachers work backward from the error to identify the valid concepts that students do understand. The program aims to improve children's mathematical skills by changing teachers' beliefs regarding how children learn and ultimately their teaching practices.

Cognitively Guided Instruction is a way for teachers to understand children's intuitive mathematical thinking and use that knowledge to help children learn mathematics with understanding. This research-based model of children's thinking is designed to help teachers construct conceptual maps of the development of children's mathematical thinking in specific content domains. CGI will help teachers in facilitating any mathematics curriculum or materials they are currently using.

Cognitively Guided Instruction Classroom (CGI)

Predominant Addition/Subtraction Method and Related Conceptual Structure	Instructional Strategies	Classroom Supports
Methods that begin with one number and move up and down the sequence by tens and ones [Sequence tens-ones] Decompose-tens-and-ones methods - tens and ones are added or subtracted separately from each other [Separate tens-ones]	- Word problems provide basis for almost all instruction - methods develop as natural extensions of methods to solve problems using single units - teacher as facilitator - encourages child to collections of tens and ones - place value concepts emerge through use of base ten materials - no prevalent strategy in use at one time - children learn from interacting with each other - children shift among representations as they solve problems or discuss solutions	Discussion - strategies discussed serve as model for others - provides opportunity for children to reflect - children use counters to solve problems by modeling the problems - counters - tens blocks which are eventually seen as convenient collections of unit counters - in time depend less on counters

CGI Training Components

Cognitively Guided Instruction (CGI) is a professional development program for teachers of kindergarten through the sixth grade. CGI helps teachers understand their students' mathematical thinking which correlates to vast improvements in students' mathematical understanding and problem solving skills. It has been proven effective for boys and girls of diverse social class, racial, ethnic, and language proficiency backgrounds. At this time, all four of the following CGI workshops are held as week-long institutes for a total of 30 hours of training time in SD Counts 1.

Basic CGI Training
This workshop is designed for teachers of kindergarten through third grade children and those who work with such teachers. No prior experience with CGI is necessary.

Advanced CGI Institute
This Institute is designed for people who want to take a deeper look at CGI to improve how they use CGI with children and/or to support other teachers in learning about CGI. Emphasis will be placed on children's understanding of base ten strategies that children use to solve problems with large numbers and how what we know about such understanding influences our mathematics instruction. Information on how to support teachers' learning will be integrated into our deeper look at children's thinking. Information on how to support teachers' learning will be integrated into our deeper look at children's thinking.

CGI Algebra
This Institute helps elementary school teachers integrate the major principles of algebra into their arithmetic instruction. This program is based on the premise that children throughout the elementary grades are capable of learning powerful unifying ideas of mathematics that are the foundation of both arithmetic and algebra. This Institute will focus on how learning and articulating these ideas enhances children's understanding of arithmetic and provides children with a solid basis for extending their knowledge of arithmetic to learn algebra. This Institute is designed for teachers of children in grades 1 - 6 and those who work with such teachers.